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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/618,928	07/11/2003	Hung-Sheng Hu	B-5157 621092-0	6643

7590 06/15/2005

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EXAMINER

DO, AN H

ART UNIT PAPER NUMBER

2853

DATE MAILED: 06/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/618,928

**Applicant(s)**

HU ET AL.

**Examiner**

An H. Do

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 11 March 2005.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.  
4a) Of the above claim(s) 8, 10, 13-30, 35, 37 and 40 is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-3, 5-7, 9, 11, 12, 31, 33, 34, 36, 38 and 39 is/are rejected.  
7) ☒ Claim(s) 4 and 32 is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 07 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 7/11/03.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

The Response filed on 11 March 2005 has been acknowledged.

#### ***Election/Restrictions***

1. Applicant's election of Group I and Species Ia including claims 1-14 and 31-40 in the reply filed on 11 March 2005 is acknowledged. However, claims 8, 10, 13, 14, 35, 37 and 40 are not considered belonging to the elected species Ia because they include distinct features. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).
2. Claims 8, 10, 13-30, 35, 37 and 40 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Invention, there being no allowable generic or linking claim.

#### ***Priority***

3. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

#### ***Information Disclosure Statement***

4. The information disclosure statement (IDS) submitted on 11 July 2003 was filed and is being considered by the examiner.

#### ***Specification***

5. The abstract of the disclosure is objected to because the term "comprises" should be changed to --includes--. Correction is required. See MPEP § 608.01(b).

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-3, 5-7, 11, 12, 31, 33, 34, 38 and 39 are rejected under 35

U.S.C. 102(b) as being anticipated by Silverbrook (US 6,019,457).

Silverbrook discloses in Figures 9-12 the following claimed features:

Regarding claims 1 and 31, a fluid injector (Figure 12) comprising:

-a base (substrate 130 and insulation layer 132) including a chamber (cavity 112) and a surface (top surface of substrate 130);

-a first through hole (opening of substrate 130) , communicating with the chamber (cavity 112), disposed in the base (substrate 130 and insulation layer 132);

-a bubble generator (heater 120) disposed on the surface (top surface of substrate 130) near the first through hole outside the chamber (cavity 112) of the base (substrate 130);

-a passivation layer (142) disposed on the surface (on top of insulation layer 132); and

-a metal layer (passivation layer 144, column 9, lines 11-14), defining a second through hole (nozzle tip 111 of layer 144), disposed on the passivation layer (142) outside the chamber (cavity 112), wherein the second through hole (nozzle tip 111 of layer 142) communicates with the first through hole (opening of substrate 130).

Regarding claim 2, wherein the bubble generator (heater 120) comprises: a first heater (right heater 120), disposed on the surface outside the chamber (cavity 112), for generating a first bubble in the chamber; and a second heater (left heater 120), disposed on the surface outside the chamber (cavity 112), for generating a second bubble in the chamber to inject fluid in the chamber, wherein the first heater (right heater 120) and the second heater (left heater 120) are located at opposite sides (Figures 10 and 12, column 7, lines 27-32) of the first through hole (opening of substrate 130).

Regarding claim 3, wherein the bubble generator (heater 120) includes a heater (Figure 10, heaters 121 and 122).

Regarding claim 5, wherein the diameter of one end, communicating with the first through hole, of the second hole (nozzle tip 111 of layer 144) is substantially larger than that of the other end of the second through hole (Figure 12).

Regarding claims 6 and 33, further comprising: an adhesion layer (first and second metal layers 134, 138), disposed between the base (substrate 130 and insulation layer 132) and the metal layer (passivation layer 144, column 9, lines 11-14), for assisting in adhesion between the metal layer and the base (Figure 12, column 8, lines 6-35).

Regarding claims 7 and 34, wherein the adhesion layer is Al (column 8, lines 6-35).

Regarding claims 11 and 38, wherein the base (substrate 130 and insulation layer 132) comprises: a silicon substrate (substrate 130, column 7, lines 44-46); and a

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structural layer (insulation layer 132) disposed on the silicon substrate to form the chamber (cavity 112) therebetween.

Regarding claims 12 and 39, wherein the structural layer (132) defines a third through hole (nozzle tip 111 of layer 132), and the passivation layer (142) defines a fourth through hole (nozzle tip 111 of layer 142) corresponding to the third through hole (Figure 12), and the metal layer (passivation layer 144, column 9, lines 11-14) is directly connected with the silicon substrate (130) via the fourth through hole (to form nozzle tip 111).

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 9 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Silverbrook (US 6,019,457) in view of Haluzak et al (US 6,398,348).

Silverbrook discloses the claimed invention except for reciting the metal layer is Au.

Haluzak et al teach in Figure 6 the metal layer (84) is Au.

It would have been obvious to one having ordinary in the art at the time the invention was made to have the metal layer made of Au, as taught by Haluzak et al into Silverbrook, for the purpose of forming a conductive layer.

***Allowable Subject Matter***

10. Claims 4 and 32 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

The primary reason for the allowance of claims 4 and 32 is the inclusion of the limitation of a fluid injector that includes a metal layer having a plurality of fins on a surface away from the base to assist the metal layer in heat dissipation. It is this limitation found in the claims, as it is claimed in the combination of, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

***Contact Information***

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to An H. Do whose telephone number is 571-272-2143. The examiner can normally be reached on Monday-Friday (Flexible).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on 571-272-2149. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



An H. Do  
June 12, 2005